population and especially among the 100 Caucasian subjects. Thus, in the country where Proust (1913) wrote 'mon ravissement était devant les asperges qui jouaient . . . comme une féérie de Shakespeare à changer mon pot de chambre en vase à parfum', production of odorous urine after asparagus consumption appears to be the general rule.

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Asparagus and malodorous urine

I read with interest the findings of the French investigators reported in the preceeding letter (Richer *et al.*, 1989). It is indeed a curiosity that the ingestion of asparagus imparts a strong characteristic odour to the urine whereas other vegetables apparently do not.

That some individuals excreted this malodorous urine was known to the late Professor W. V. Thorpe (University of Birmingham) who exploited this peculiarity during the 1930s in his practical classes to demonstrate interindividual variation to students. This common knowledge of variability remained anecdotal and was not documented in the literature until 1956 (Allison & McWhirter, 1956). The phenomenon was unfortunately regarded as an amusing though unimportant oddity; its investigation a triviality rather than serious science. Even in relatively recent times such information has been regarded as trifling. In McKusick's tome on Mendelian Inheritance a personal communication to the editor from W. K. Maas explains that a non-excretor may become an excretor during pregnancy, the unborn child presumed to be an excretor (and also, I assume, the father) (McKusick, 1983).

When a phenomenon is assessed subjectively, apprehension always exists concerning the results. Even cross-checking with independent assessors does surprisingly little to relieve this anxiety. The separation of the characteristic asparagus-related odour from the background odours of the urine, which may vary enormously with individuals, presents complications. Strict control samples from each subject are imperative. Indeed, even the odour associated with the phenomenon apparently lends itself to different subjective description. 'Rotten or boiling cabbage', due mainly to methanethiol, are the usual phrases employed within Europe but 'vegetable soup' has also been put forward in an Israeli study (Lison *et al.*, 1980). Until an objective method of assessment of the odour can be achieved, and strict criteria for sample handling and analysis laid down, the problems of individual opinion will remain.

A study involving over 300 Israeli Jews demonstrated that around 10% could not smell the odorous urine, a polymorphic smell hyposensitivity, and the authors suggested (but did not prove) that the ability to excrete pungent substances in the urine after eating asparagus

was a universal characteristic (Lison *et al.*, 1980). The French population reported in the preceeding letter appear to fall into this 'universal excretor' category (Richer *et al.*, 1989). We may here be witnessing ethnic differences in the biological handling of certain food components with potential implications for drug action. However, we must await the emergence of more detailed biochemical knowledge and objective methodology before this phenomenon can be fully resolved and its true importance assessed.

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